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LEARNING

Cogmed Progress Indicator, Cogmed Questionnaire & Variable Protocols - What do they tell us?

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Overview

Cogmed Progress Indicator

- Why and how was it developed?
- Findings on the CPI

Cogmed Questionnaire

- Why and how was it developed?
- Findings on the Cogmed Questionnaire

Variable Protocols

- Why and how was it developed?
- Findings on the Variable Protocols

Cogmed Progress Indicator – Background

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Development of the Cogmed Progress Indicator

Psychological Research
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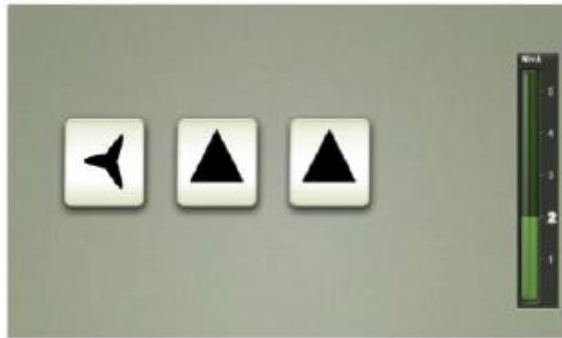
ORIGINAL ARTICLE

Effect of working memory training on working memory, arithmetic and following instructions

Sissela Bergman-Nutley · Torkel Klingberg

PEARSON

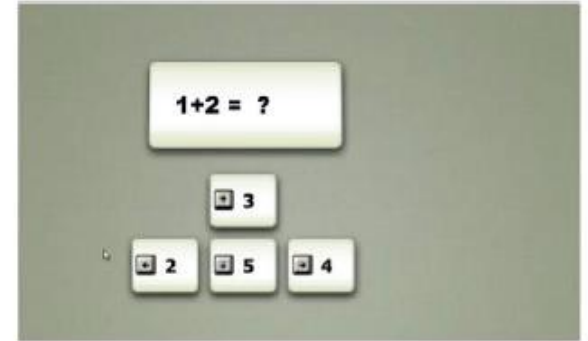
Cogmed Progress Indicator



Working memory



Following Instructions



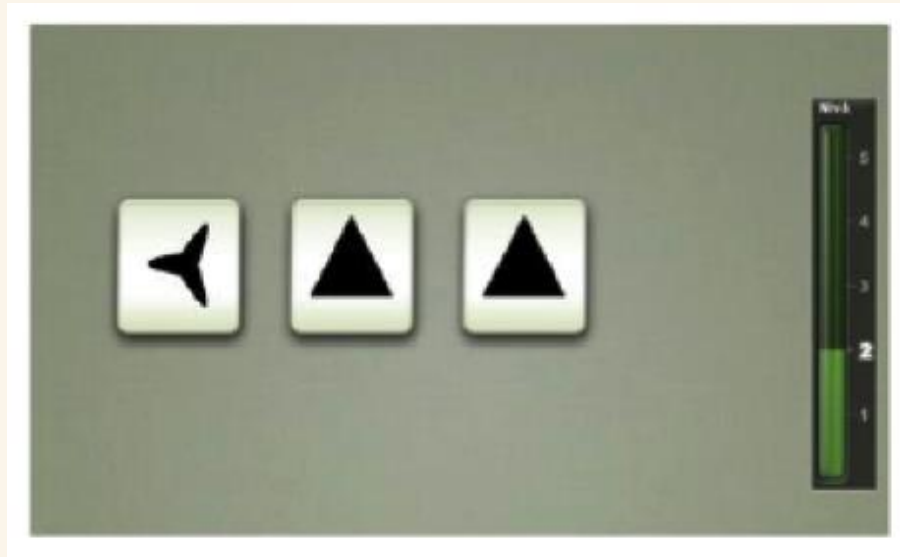
Math

Goals:

- Monitor improvements on non-trained tasks (in addition to index)
- Provide basis for feedback to user
- Provide a tool for development of training program

Cogmed Progress Indicator

– Working Memory



- An “Odd One Out” task
- Visuo-spatial working memory task with manipulation component.

Cogmed Progress Indicator

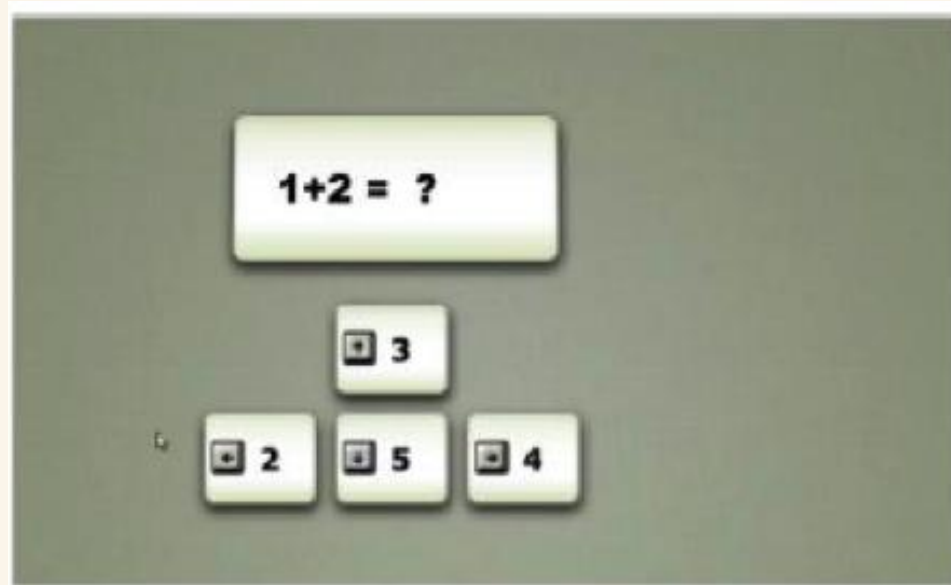
– Following Instructions



- Verbal instructions to be remembered and performed.

Cogmed Progress Indicator

– Math Challenge



- Speeded arithmetic, addition and subtraction tasks during 60 seconds.

Cogmed Progress Indicator – initial testing

Testing: Day 1, 10, 15, 20, 25

Passive Control group (n = 375, ages 6-15)

Training group (n = 175, 6-17 years)

CPI Task	N	r (T1-T2)	Test-retest (T1- T5) average % improvement
Following Instructions	301	0.53	1
Working Memory (Shapes)	305	0.70	4
Math Challenge	268	0.88	5

T=time point

Results on CPI from 4 countries



n = 1226



n = 346



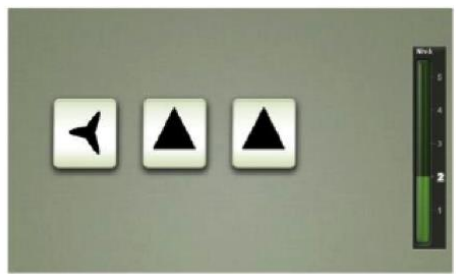
n = 352



n = 223

Total N = 2147

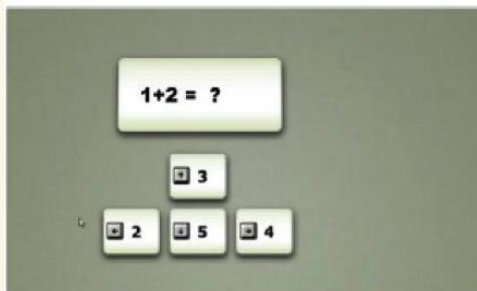
Improvements on the CPI (after adjusting for test-retest effects)



78% of end-users improve
on working memory



78% of end-users improve
on following instructions



64% of end-users improve on
Math challenge

Improvements on the CPI

Number of CPI tasks improved on (after adjusting for test-retest effects):

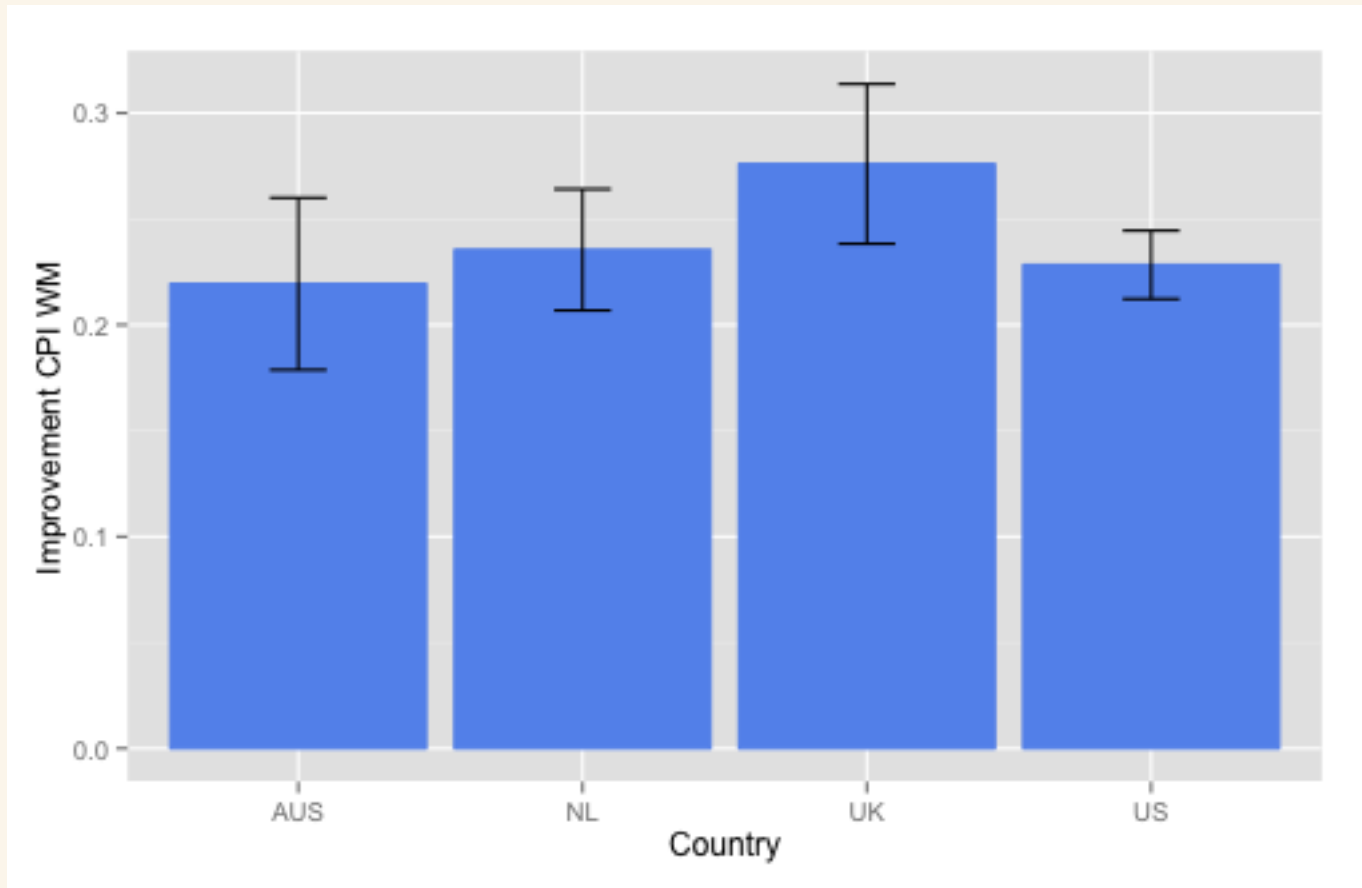
0 tasks – 3%

1 task – 16%

2 tasks – 37%

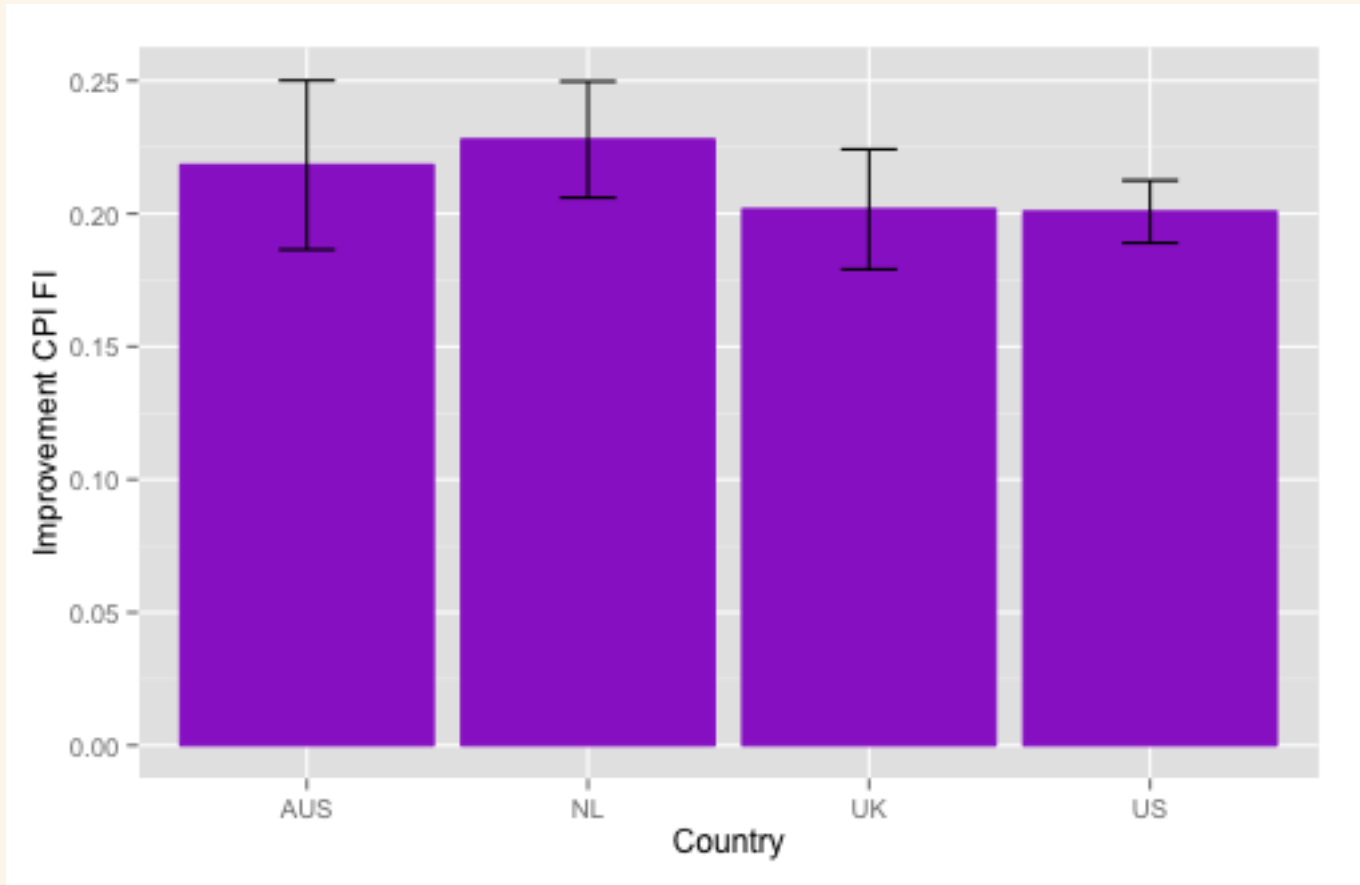
3 tasks – 44%

Working Memory



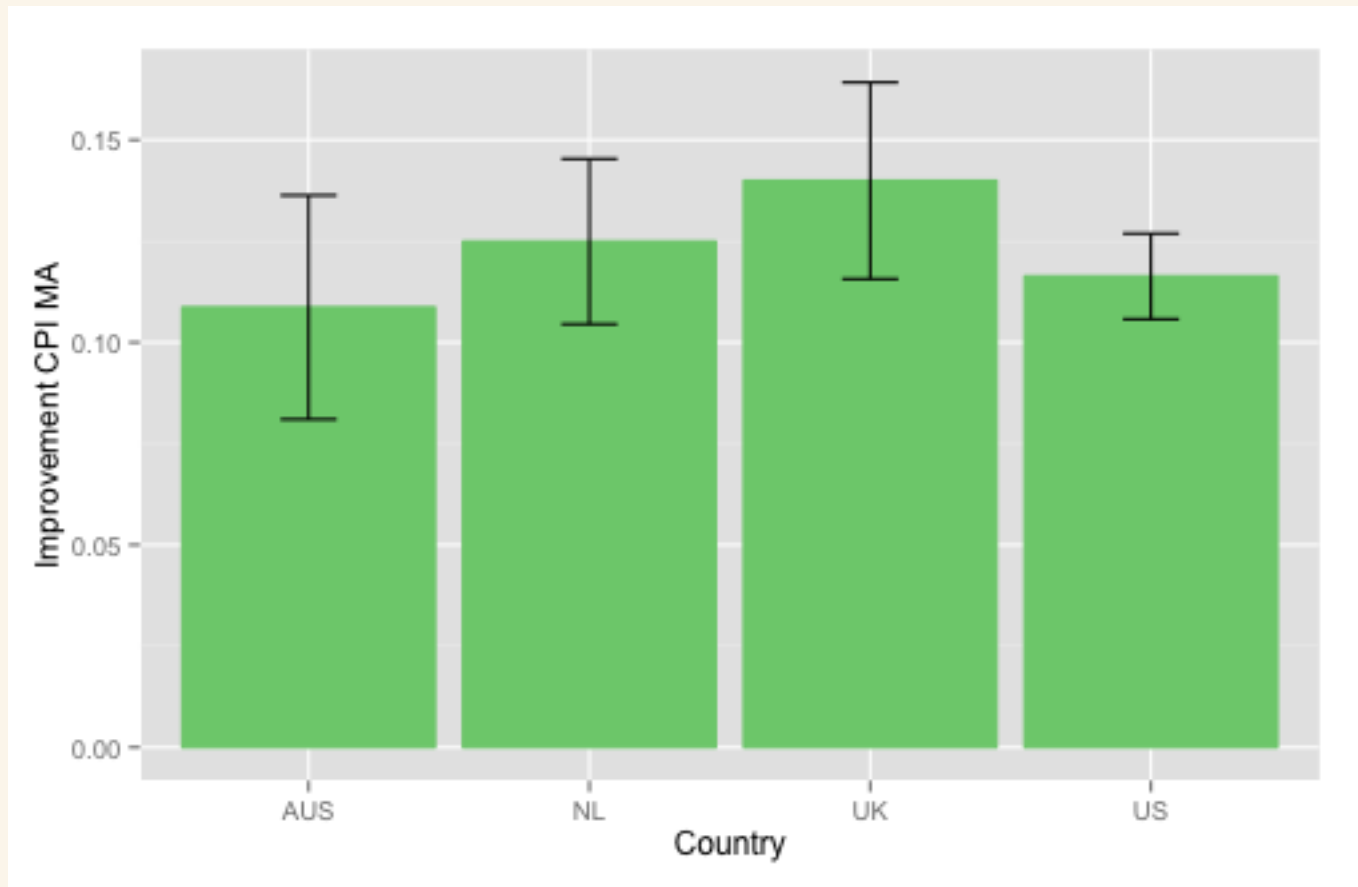
Overall average improvement 24%
(after adjusting for test-retest effects)

Following instructions



Overall average improvement 21%
(after adjusting for test-retest effects)

Maths



Overall average improvement 12%
(after adjusting for test-retest effects)

How to interpret CPI data

- The majority of Cogmed trainees show improvements on at least one CPI task, but it is common that improvements are not seen on all three tasks.
- We recommend that Cogmed coaches explain to the trainee that it is normal to not improve on all tasks and that this does not necessarily reflect poor training performance.

How to interpret CPI data

- As always we encourage a “whole picture” view and that improvements in every-day life are highlighted.

Cogmed Questionnaire

(US and Australian data only, N = 1300)

Cogmed Questionnaire – Attention and every-day cognitive function

Aims

- 1) Provide the trainee and the coach with a built-in tool to encourage thinking about and discussing the role of WM and attention in every-day life.
- 2) Allows coaches and us to monitor improvements in inattentive symptoms.

Cogmed Questionnaire – Attention and every-day cognitive function

- Questions presented at first log-in and at last training session.
- Including self-ratings of inattentive/general cognitive problems.
- Based on the DSM-IV ADHD scale, questions of inattention

Attention and every-day cognitive function - Results

- 84% of trainees report improved attention after training.
- Average improvement 32%
- Individuals who report lower baseline attention tend to report great improvements after training.

Cogmed Questionnaire

– Motivation/expectations

Aims

- 1) Allow the coach to detect low levels of motivation and to initiate appropriate coaching/encouragement as a result.
- 2) Allow us to investigate how motivation influence training.
- 3) Allow us to measure trainee satisfaction.

Cogmed Questionnaire

– Motivation/expectations

- Mainly adapted from the Intrinsic Motivation Inventory
- 8 questions regarding expectations and experience of the training.
- Appear before, during (partly) and after training.

Cogmed Questionnaire

– Motivation/expectations

"How much do you agree with the following statements?"

1. I think the training will help me.
2. I think I'll be pretty good at doing the training.
3. I plan on putting a lot of energy into the training.
4. I think the training will be very challenging.
5. I think that the training will be fun.
6. It is important to me to do well on the training.
7. I believe that I will be able to complete the training.

Scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree,

4 = neither agree or disagree, 5 = somewhat agree, 6 = agree, 7 = strongly agree

Overall rating is high before the training (average 5.5) with a small but non-significant increase after training.

Cogmed Questionnaire

– End-user experience (post training)

1) *I think the training helped me*

84% agree

2) *I think I was pretty good at doing the training*

85% agree

3) *I put a lot of energy into the training*

85% agree

4) *I think the training was challenging*

84% agree

5) *I think that the training was fun*

52% agree

6) *It was important to me to do well on the training*

86% agree

Ongoing

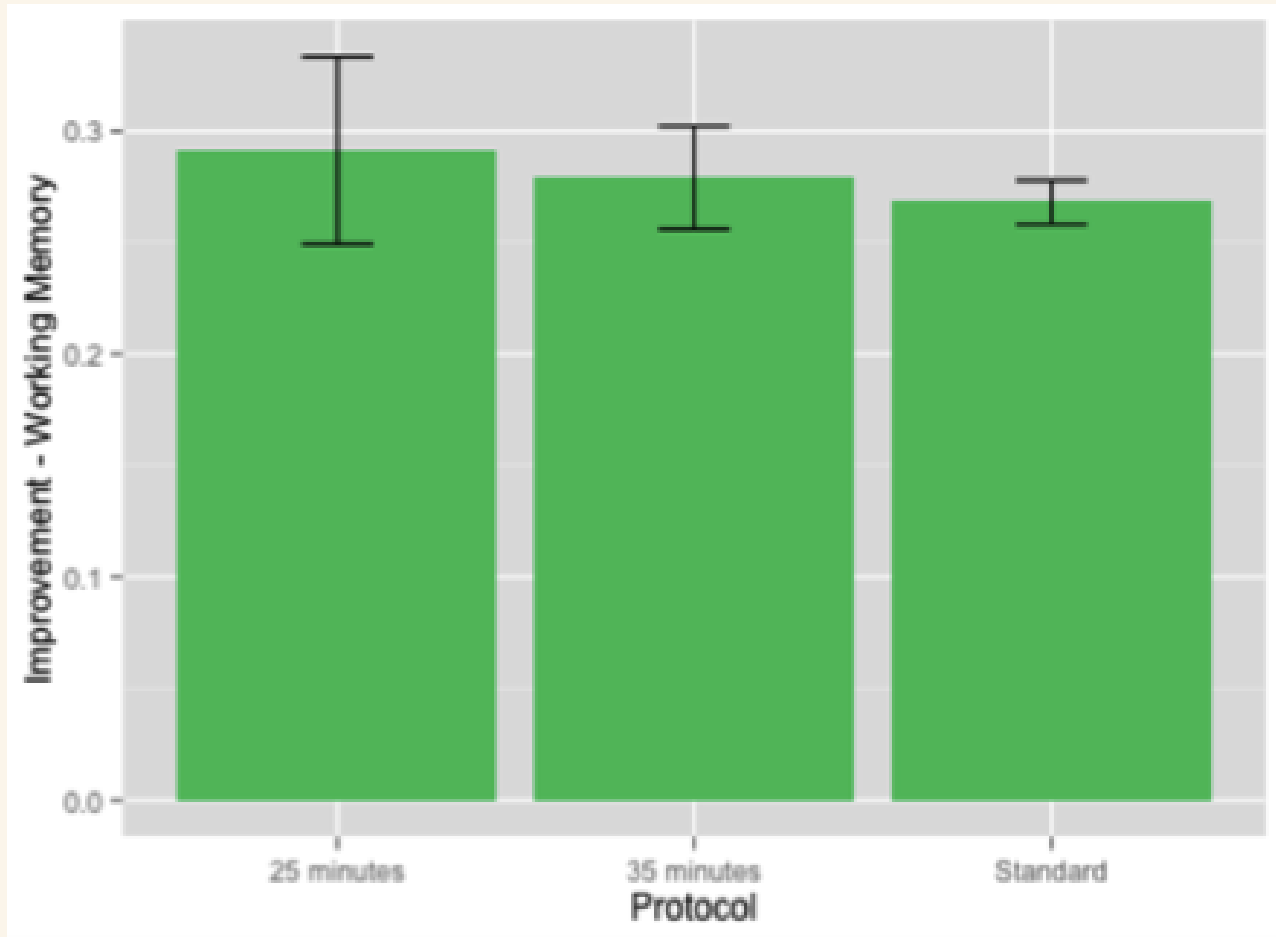
– Motivation/expectations

- Study investigating the role of prior motivation and attitudes for training compliance and performance.
- Also investigating the influence of feedback given during the training on motivation and training performance/improvement.

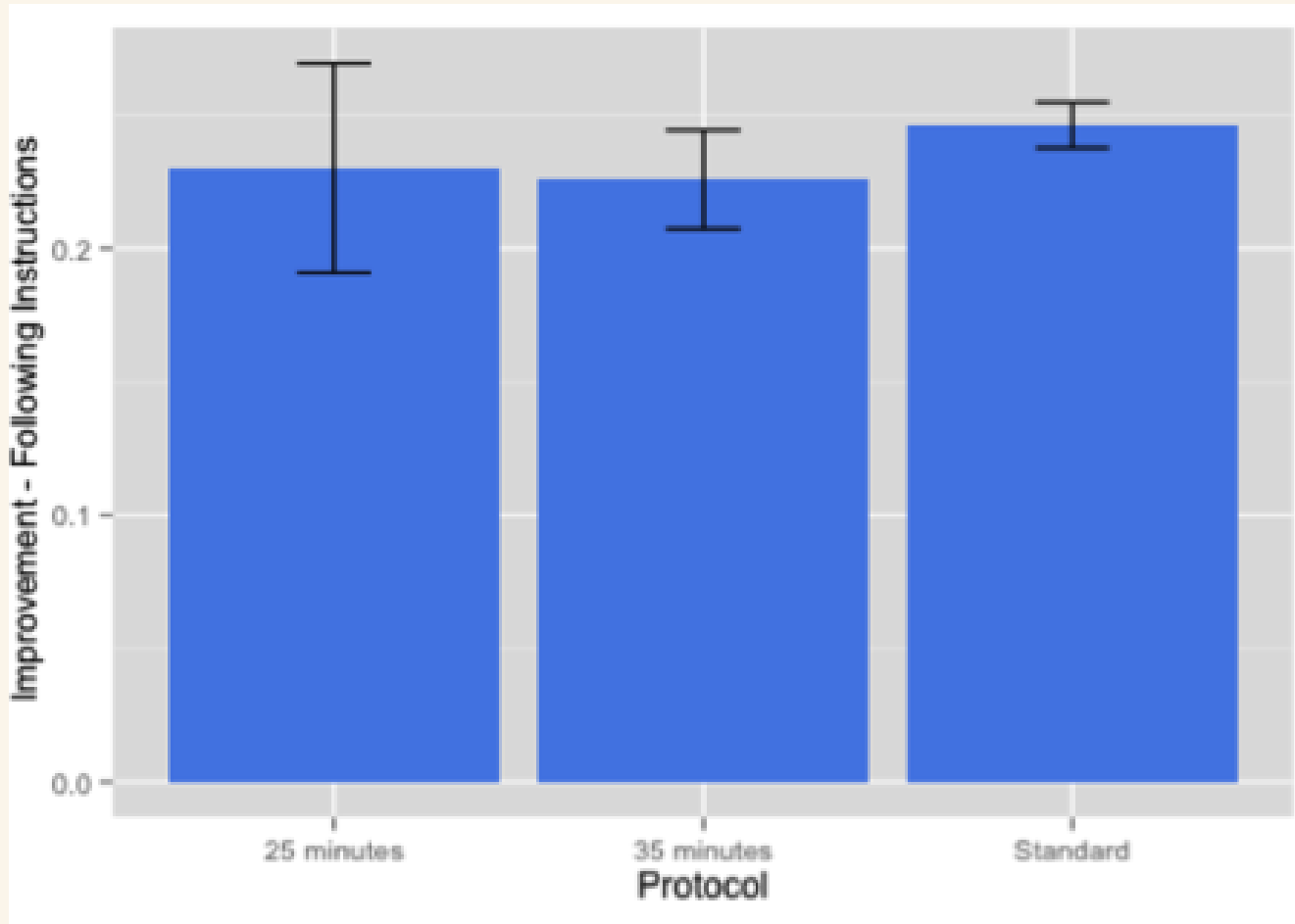
Variable Protocols

- Cogmed introduced the variable protocols in order to allow for more flexibility in training.
- In addition to the original protocol 2 new protocols were introduced:
 - 25 minutes/training blocks, total of 40 training blocks.
 - 35 minutes/training blocks, total of 30 training blocks.

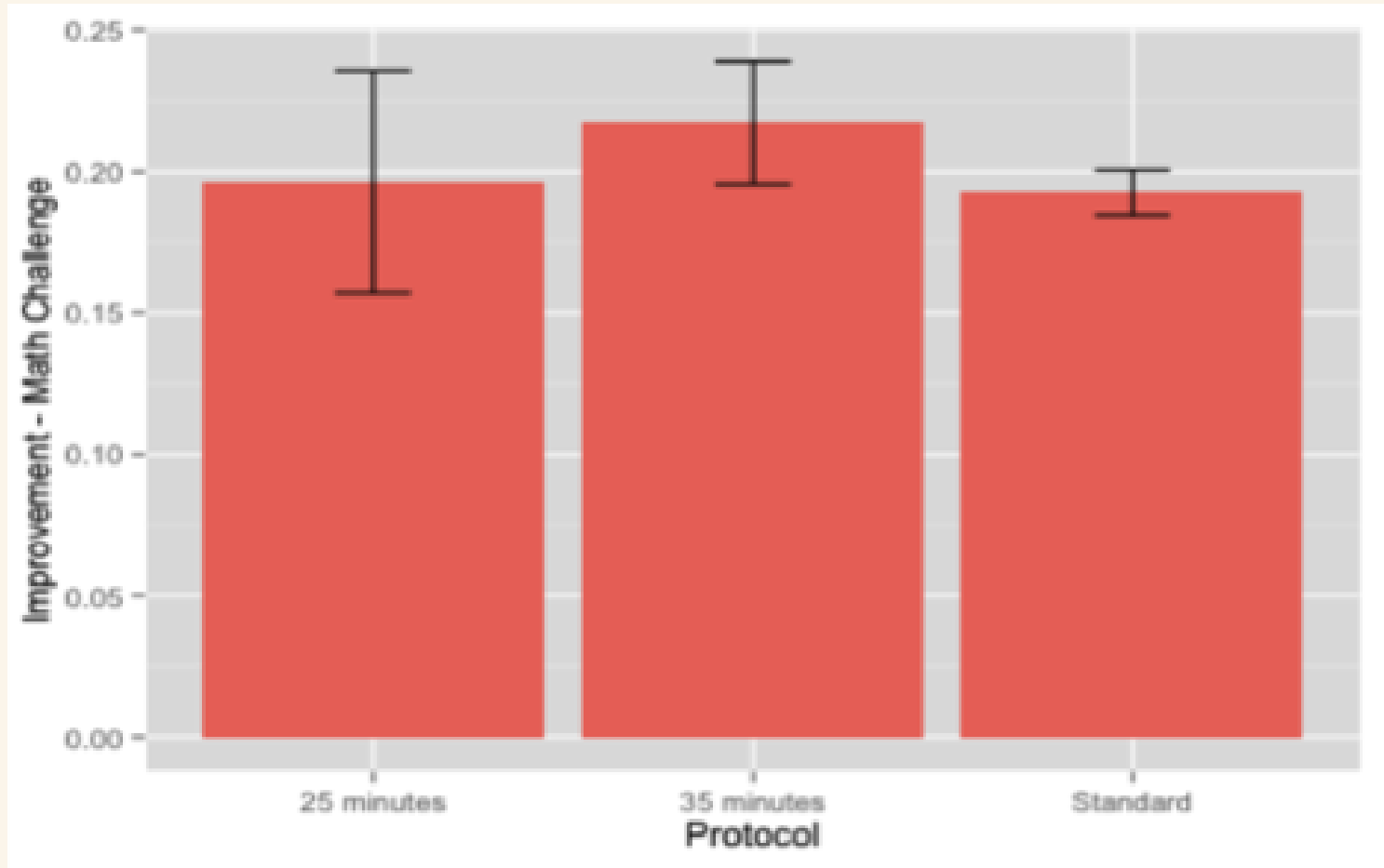
Variable Protocols



Variable Protocols



Variable Protocols



Variable Protocols - summary

- Shorter protocols observed to be as effective in leading to transfer improvements as is the original protocol.
- The shorter training protocols were rated more positively by trainees.
- The shorter protocols can be recommended with confidence to trainees who are less likely to manage training on the original protocol, whether this is due to time constraints in every-day life or due to limited cognitive endurance.

THANK YOU FOR LISTENING!

**NOW TIME FOR YOUR
QUESTIONS AND
SUGGESTIONS!**